

CERN/TC/COM 65-7
2.2.1965

CERN TRACK CHAMBER COMMITTEE

Meeting on January 27, 1965

Decisions taken at the Meeting

Present : 80 people were present at the meeting.

1. Approval of the minutes of the last meeting

The minutes of the last meeting (CERN/TC/COM 64-81) were approved.

2. The CERN HBC 200

C.C. BUTLER announced that the HBC 200 has been operated successfully during December 1964 and that it is being prepared at present for the first physics run.

This announcement was received with applause.

3. Presentation of the report of the Bubble Chamber Policy Working Group on future large bubble chambers

C.C. BUTLER introduced the draft report which had been distributed at the meeting. As the Working Group had met in the morning of the same day to discuss this draft, only the conclusions could be brought into the form as amended by the Working Group for this meeting of the T.C.C. The changes in the text, however, are only concerned with the wording and do not alter the arguments brought forward. It is proposed therefore to now discuss this draft and to start with the conclusions.

V.F. WEISSKOPF preferred to make the remark where it said that "....it seems that the situation of CERN will be for a while unique especially for high-energy neutrinos" somewhat weaker as chambers and beams could be brought together as well in the United States for the purpose of neutrino running.

Ch. PEYROU replied that the statement as it stands describes the actual situation.

C. RAMM wishes to push the construction of a large HBC still more and not to delay the final decision on this chamber until after a design study has been done.

After a discussion of these points, Ch. PEYROU proposed to delete point II) and III) of the end of the conclusions and to leave only I), therefore saying that the T.C.C. recommends the construction of the two chambers as soon as possible.

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This was agreed.

C.C. BUTLER asked whether the meeting would approve the draft with this amendment, so the approved report could be sent to the Chairman of the Scientific Policy Committee.

The draft report was approved with the amendment as proposed by Ch. PEYROU.

## 4. Report on the runs with the BNHBC 152 and the Saclay HBC 81

W.O. LOCK reported on the runs carried out with these two chambers. Due to extensive and successful testing of the R.F. separated beam and to failures of the C.P.S., the number of pictures taken was less than anticipated. During December 1964, 50,000 pictures were taken for T59 ($\pi^+$, 5 GeV/c) and 50,000 for T65 (p, 10 GeV/c) with the BNHBC 152, and 80,000 pictures for T47 ($K^-$, 800 MeV/c - 1200 MeV/c) with the Saclay HBC 81. 4,000 pictures were taken with $K^-$ at 10 GeV/c in the BNHBC 152.

B. MONTAGUE spoke about the testing and the first run using the R.F. separated beam. The beam was tuned for $K^-$, 10.12 GeV/c, with the C.P.S. running at 21.5 GeV/c and a 2 sec rep. rate, giving between $7.10^{11}$ and $9.10^{11}$ protons/pulse. The intensity in the BNHBC 152, which was about 18 particles/pulse, was deliberately reduced to 7 particles/pulse, with 63°/o $K^-$, 34°/o $\mu^-$ and 3°/o $\pi^-$. The operation was done with three other users of the machine working simultaneously. About 50°/o of the circulating protons were used, 10°/o for producing the K's and 40°/o for re-shaping the beam which had been blown up by another target located upstream. If the k4 beam can work with 15°/o of the circulating protons, the R.F. beam can be operated simultaneously with the k4 beam.

W.W. NEALE felt that one could run with $K^-$ at 14 GeV/c using the full intensity of the C.P.S. and running at 24 GeV/c.

This report on the successful operation of the R.F. separated beam was received with applause.

## 5. New proposals for experiments

M. BLOCK explained an experiment he wants to propose which aims at measuring the coupling constant $G_\Lambda$ for the decay ${}_\Lambda He^4 \longrightarrow He^4 + e^- + \nu$ in a HeBC with stopping $K^-$. Furthermore, it is planned to study the polarization of the protons of the $\Lambda\beta$-decay in the same pictures, using Helium as the analyzer. If one stops $10^7 K^-$ in $10^6$ pictures, one expects to obtain the ratio of the coupling constants $G_\Lambda/G_\beta$ to about 7°/o. 250 events should be useful for the polarization analysis, and a study of the 4-baryon interaction $\Lambda + p \longrightarrow p + n$ should be possible as well. Among the by-products would be $\sim 3.10^5$ hyperfragments. To do this experiment it is proposed to transport the Northwestern University helium bubble chamber, with a volume of 50 x 30 x 25 $cm^3$ (NU HeBC 50) to CERN. The chamber, which is fitted with a 30 kG-magnet consuming 3 MW, should be transportable in 2 - 3 months. Before the actual experiment it is proposed to run the chamber in a test beam for a few months.

M. AUBERT presented the proposal X4 for the measurement of the $K_2^o \rightarrow \pi^o \pi^o$ branching ratio with the CERN 1m HLC. The main difficulty seems to be at present to find a location at C.P.S. where this experiment could be done.

L. VAN HOVE spoke on the importance of this experiment which should be pushed.

C. MUNDAY commented on the different locations discussed until now where X4 might be carried out. Each one seems to present some major difficulties.

Ch. PEYROU believed that X4 looks more important than X2, which should be done with the CERN 1m HLC as well. But, do all the groups participating in X2 agree to this statement ?

C. FRANZINETTI pointed out that some groups of the X2-collaboration are now hearing of the X4-proposal for the first time. They should be given some time to discuss it.

Ch. PEYROU proposed that the X2-collaboration should discuss with the people wanting X4 and should report back at the next meeting or should inform the Chairman about their conclusions.

This was agreed.

## 6. Experimental programme early 1965

C.C. BUTLER explained that the new situation created by the operation of the CERN HBC 200 and the R.F. beam makes it necessary to rediscuss the experimental programme for the present period until the shut-down. Furthermore, it is possible that the shut-down may be delayed by one month and would therefore start in June.

Ch. PEYROU proposed a programme for runs during this period, under the hypothesis that the period would last until the end of May.

After a detailed discussion of this proposed programme, it was decided to run with the

1) Saclay HBC/DBC 81, three weeks together for T100 ($\bar{p}$ stopping in deuterium) and T101 ($\bar{p}$ stopping in hydrogen). Furthermore, two weeks should be divided between T47 and T98 ($K^+$ 740 MeV/c - 800 MeV/c in hydrogen), in parallel with T64, allocated in the BNHBC 152, and two weeks for T100 and T101 in parallel with T87 and T64 in the BNHBC 152.

2) BNHBC 152, three weeks with the R.F. beam for T64 ($K^-$, 10 GeV/c), two weeks for T87 ($\pi^+$, 12 GeV/c) and two weeks for T59 ($\pi^+$, 5 GeV/c). Two weeks should remain in reserve for high-energy running at the end of the period, in parallel with $\nu$-running without the R.F. separated beam. As soon as $K^+$ with the R.F. beam can be done, this should be scheduled.

3) CERN HBC 200, one week for T99 ($K^+$, 5 GeV/c), three weeks for T80 ($\bar{p}$, 3.6 GeV/c) and two weeks for T88 ($\bar{p}$, 2.5 GeV/c).

## 7. General discussion of the experimental programme for the period June-October 1965

Ch. PEYROU explained that the o8-beam (= o6, deflected towards the CERN HBC 200) and the U-beam will be built so that running with the CERN HBC 200 could start after the shut-down with the o8. It is hoped that the R.F. separated U-beam would be completely installed by October 1st, at the latest. Deuterium will not be available during 1965, probably not before the middle of 1966(1). Shorter beams with lower energy could be built starting from the U-beam. Proposals for experiments should be presented as soon as possible, where it is hoped that some of the groups now wanting pictures in the m5-beam would propose experiments in the HBC 200 instead, in view of the overloaded programme in the m5-beam.

P. FLEURY reported on a meeting of the groups proposing experiments in the m5-beam. Most runs are in deuterium. At present, 1,850,000 pictures, all in deuterium, are proposed to be taken as soon as possible, and 1,600,000, of which 1,000,000 in hydrogen, to be taken later.

Ch. PEYROU recommended committing the m5-beam for not more than six months because of the k5-beam.

H. FILTHUTH recalled the proposal T102 ($K^-$, 0-400 MeV/c) which is for 1,000,000 pictures. To this, the same number of pictures in the NU HeBC 50 should be added, if this proposal is accepted. The plan is to take these pictures over a period of 1 and a half to 2 years, but starting rather soon.

Ch. PEYROU proposed that P. FLEURY should present a programme for operating about 6 months in the m5-beam for decision at the next meeting.

This was agreed.

## 8. Next meeting

The next meeting of the T.C.C. will be held on Wednesday, February 10, 1965 at 2 p.m. in the Main Auditorium.

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(1) Remark by the Secretary : According to some new information it seems that this date can be advanced.